

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**THE RISE  
DEVELOPMENT  
AND INTERNATIONALIZATION  
OF  
JAPAN'S MOTOR INDUSTRY**

A thesis presented in partial fulfilment of  
the requirements for the degree of  
Master of Philosophy  
in Geography  
at Massey University  
Palmerston North, New Zealand

**LUCIUS C. P. VAN MOESEKE**

**1995**

## ABSTRACT

The rise of Japan's motor industry to world prominence has been one of the most spectacular developments of modern times and has come to epitomize Japan's 'economic miracle' in the postwar era. The industry's phenomenal growth was the result of various factors. During its infant and developing phases these included: a legacy in terms of industrial expertise from before the War; a much improved labour relations climate; and the favourable economic conditions that prevailed both at home and abroad that provided the framework for an era of high-speed growth. The most significant factor though, was the support given by the government which considered the industry as economically 'strategic' and 'nurtured' it to growth — along with many of its supporting industries — with a wide range of industrial policies.

Notwithstanding the contribution of these factors, however, the industry showed a remarkable resourcefulness and creativity of its own. Borrowing engineering and management techniques from abroad such as Quality Control, and experimenting with new indigenous concepts such as Just-in-Time, the industry was able to dramatically raise the quality of its products and its levels of productivity. Based on these strengths the Japanese automakers became, during the 1970s, major exporters of motor vehicles and were able to capture ever larger shares of foreign markets. In recent years, however, confronted with increased international trade friction, the erection of trade barriers in its major foreign markets, and the rising value of the yen, the industry has increasingly sought to move operations abroad. These moves to overseas locations are on such an unprecedented scale that they are contributing to create a new international geography of motor vehicle production.

338.476296222095

Van

DC20

## ACKNOWLEDGEMENTS

I would like to express here my most sincere gratitude to the following people:

To my supervisor, Mr. Geoff Thomas, for his invaluable guidance, assistance and advice throughout my course. I am especially indebted to him for the help and moral support he gave me at a critical time in 1993 when because of events of *force majeure* I had to suspend my academic work. It is thanks to his help and encouragement that I was able to continue with my studies.

To Prof. Flenley for his kindness in enabling me to continue in the Master's programme.

To my father, dont l'aide à la foîs financière et académique est très appréciée.

To my mother, que me ha dado todo y más de lo que un hijo puede esperar; y a mis abuelitos que en todo momento han sido mi mayor fuente de inspiración.

To Elsa, for her invaluable help, support and encouragement throughout my studies.

And to my many good friends: Enrique Astorga and family, Sylvia Weil, Lucina Tabatu-Pilumate, Helmut and Suzanne Sandig, and all those who made my stay in New Zealand such a pleasant and memorable experience.

**CONTENTS**

ABSTRACT.....	I
ACKNOWLEDGEMENTS.....	II
CONTENTS.....	III
LIST OF TABLES.....	IV
LIST OF FIGURES.....	V
CHAPTER ONE: Introduction.....	1
CHAPTER TWO: The Rise of Japan's Motor Industry, 1945-1973.....	13
CHAPTER THREE: Japan's Motor Industry Comes of Age.....	38
CHAPTER FOUR: The Japanese Manufacturing Revolution .....	54
CHAPTER FIVE: Just in Time or Just Too Much?: The Effects of JIT/TQC on Labour .....	83
CHAPTER SIX: The Japanese Subcontracting Pyramid.....	100
CHAPTER SEVEN: The Japanese Motor Industry in International Perspective.....	117
BIBLIOGRAPHY.....	146

**LIST OF TABLES**

1.1 Japanese Motor Vehicle Production and Exports 1950-1993.....	5
3.1 Quality Scores for Selected US and Japanese Small Automobiles, 1968-1979.....	46
3.2 US-Japanese Differences in Labour Hours per Small Car in Selected Plants (1980).....	48
7.1 Summary of Assembly Plant characteristics, Volume producers, 1989.....	118

## LIST OF FIGURES

1.1 Major Materials and Parts Used in Motor Vehicle Production.....	2
1.2 World Motor Vehicle Production 1990.....	4
1.3 Japan's Share of World Motor Vehicle Production.....	6
3.1 Japanese Import Penetration of Selected Industrialized countries 1970-1982.....	39
3.2 Structure of Car Demand in Major Vehicle Producing Countries, 1973 & 1982.....	41
3.3 U.S. Motor Vehicle Sales (in thousands of units), 1965-1981.....	42
3.4 Overall Quality Scores for American and Japanese Small Cars, 1968-1979.....	46
3.5 Vehicle Productivity (vehicles per worker/year) in Selected Automakers.....	49
4.1 Improvement Effects of Quality Control on The Manufacturing Process.....	56
4.2 Example of the Operation of a Pull System.....	65
4.3 Toyota's Dual <i>Kanban</i> System.....	66
4.4 Comparison of JIT and Large-Lot EOQ (Mass Production) Operations.....	69
4.5 Pond of Inventory.....	70
4.6 Approaches to Unreliable Machines.....	71
4.7 Cause and Effect Ishikawa 'Fishbone' Diagram.....	76
4.8 Incremental Efficiency Increase.....	77

4.9 Effects of Total Quality Control blended with Just-in-Time Production.....	81
5.1 Efficiency Improvements by Multi-process Handling Operation.....	86
5.2 Example of the Flexibility of Workers in U-shaped lines.....	87
6.1 Division of Labour in the Japanese Motor Industry.....	102
7.1 Sales of Selected Luxury Cars in the U.S. Market, 1989-1993.....	122
7.2 Full Model Change Cycles of Popular Japanese and Western Automobiles.....	126
7.3 Investments and Tie-ups of Japanese Automakers in N. America and Europe.....	134
7.4 Japanese 'Transplant' Production Facilities in North America.....	137
7.5 Toyota and Nissan's Keiretsu Network in America.....	139
7.6 Japanese Auto Plants and Related Activities in Europe.....	141